PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference NM5179	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/IB 2002/002518	International filing date *(day/month/year)* 28.06.2002	Priority date *(day/month/year)*
International Patent Classification (IPC) or national classification and IPC H04Q 7/38		
Applicant Nokia Corporation et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *(sent to the applicant and to the International Bureau)* a total of 4 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))
      _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
   - ☒ Box No. I Basis of the report
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
03.12.2003	13.09.2004
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/IB2002/002518

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

☐ the international application as originally filed/furnished

☒ the description:

pages 1-8 as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☒ the claims:

pages _____ as originally filed/furnished
pages* _____ as amended (together with any statement) under Article 19
pages* 1-4 received by this Authority on 28.06.2004
pages* _____ received by this Authority on _____

☒ the drawings:

pages 1-6 as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing *(specify)*: _____
☐ any table(s) related to the sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing *(specify)*: _____
☐ any table(s) related to the sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/IB2002/002518

Box No. V **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-27	YES
	Claims		NO
Inventive step (IS)	Claims	1-27	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-27	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The claimed invention

The claimed invention relates to a method and a system of sharing resources.

The claims have been amended.

The following documents were cited in the International Search Report:
D1: WO 0008884 A
D2: US 6400946 A
D3: WO 0159986 A

D1 describes in the abstract, a method and a system wherein a first switching means (MSC/VLR) of a home network performs a negotiation with a second switching means of another network which has free capacity to handle mobile stations of the first network. D1 further describes on page 11 line 26-31 that when a mobile station moves outside an allowable location area, the switching means of the visited network may either continue the call, perform an inter-network handover to the home network or to yet another visited network or it may release the call.

D1 fails to disclose a proactive operation by using another operator's or other operators' resources covered by the same geographical area. D1 discloses roaming between different networks in different geographical areas.

D2 and D3 are considered to merely disclose the state of the art and are not commented on further.

Consequently, the claimed invention as in claims 1-27 is novel, considered to involve an inventive step and has industrial applicability.

Bremen, 28 June 2004

Our Ref.: NM 5179-01WO JK/jo
Direct Dial: 0421/36 35 14

Applicant: NOKIA CORPORATION
Serial Number: PCT/IB2002/002518

New claims

1. A method of sharing resources between operators in cellular mobile communication networks, wherein each operator comprises its own dedicated resource, and wherein for a new connection, in particular an incoming call and/or a handover, a serving operator (A) is enabled during operation to use another operator's (B) or other operators' (B, C, D, ...) resource(s),
characterized in that said operators (A, B, C, D,...) cover the same geographical area, and said resource sharing is dynamical and seamless in a proactive manner so that the new connection is not interrupted.

2. The method according to claim 1, wherein said resource is a frequency, a frequency band or a channel.

3. The method according to at least any one of the preceding claims, wherein said resource comprises a radio frequency equipment.

4. The method according to at least any one of the preceding claims, wherein said resource comprises a channel processing hardware.

5. The method according to at least any one of the preceding claims, wherein each operator further comprises its own dedicated network infrastructure,

characterized in that during operation the serving operator (A) is enabled to further use at least a part of the network infrastructure(s) of the other operator(s) (B; B, C, D,...).

6. The method according to at least any one of the preceding claims, characterized in that said resource sharing is carried out upon occurrence of a predetermined condition.

7. The method according to claims 5 and 6, characterized in that said further network infrastructure sharing is carried out upon occurrence of a predetermined condition.

8. The method according to claim 6 or 7, characterized in that said predetermined condition comprises exhaustion of coverage of said serving operator (A) while other operators (B, C, D, ...) provide sufficient coverage.

9. The method according to at least any one of claims 6 to 8, characterized in that said predetermined condition comprises increase of load or overload in the serving operator's (A) network.

10. The method according to at least any one of claims 6 to 9, characterized in that said predetermined condition comprises congestion wherein there are no free resources for a new connection.

11. The method according to at least any one of claims 6 to 10, characterized in that said predetermined condition comprises a situation affecting a predetermined quality of service (QoS).

12. The method according to claim 11, wherein interferences on the serving operator's (A) network are too high to fulfil requirements of service subscription for a particular customer requiring high quality carrier.

13. The method according to at least any one of claims 6 to 12, characterized in that said predetermined condition comprises a situation wherein the costs for the connection are lower in another operator's (e.g. B) network than in the serving operator's (A) network.

14. A system of sharing resources between operators in cellular mobile communication networks, comprising means for enabling a serving operator (A) for a new connection, in particular an incoming call and/or a handover, characterized in that said enabling means is provided to dynamically and seamlessly share resource(s) from other operator(s) (B, C, D, ...) of the same geographical area during operation in a proactive manner so that the new connection is not interrupted.

15. The system according to claim 14, wherein said resource is a frequency, a frequency band or a channel.

16. The system to claim 14 or 15, wherein said resource comprises a radio frequency equipment.

17. The system according to at least any one of claims 14 to 16, wherein said resource comprises a channel processing hardware.

18. The system according to at least any one of claims 14 to 17, wherein each operator further comprises its own dedicated network infrastructure, characterized in that said enabling means enables the serving operator (A) to further seamlessly share at least a part of the network infrastructure(s) of the other operator(s) (B; B, C, D, ...).

19. The system according to at least any one of claims 14 to 18, characterized in that said enabling means enables said resources sharing upon occurrence of a predetermined condition.

20. ' The system according to claims 18 and 19,
characterized in that said enabling means enables the network infrastructure sharing upon occurrence of a predetermined condition.

21. The system according to claim 19 or 20,
characterized in that said predetermined condition comprises exhaustion of coverage of said serving operator (A) while other operators (B, C, D, ...) provide sufficient coverage.

22. The system according to at least any one of claims 19 to 21,
characterized in that said predetermined condition comprises increase of load or overload in the serving operator's (A) network.

23. The system according to at least any one of claims 19 to 22,
characterized in that said predetermined condition comprises congestion wherein there are no free resources for a new connection.

24. The system according to at least any one of claims 19 to 23,
characterized in that said predetermined condition comprises a situation affecting a predetermined quality service (QoS).

25. The system according to claim 24, wherein interferences on the serving operator's (A) network are too high to fulfil requirements of service subscription for a particular customer requiring high quality carrier.

26. The system according to at least any one of claims 19 to 25,
characterized in that said predetermined condition comprises a situation wherein the costs for the connection are lower in another operator's (e.g. B) network than in the serving operator's (A) network.

27. The system according to at least any one of claims 14 to 26, comprising a radio resource management (RRM) means,
characterized in that said enabling means is included in said radio resource management (RRM) means.